

Subject: HPA
Date: Wednesday July 22, 1998 07:02 -1000
From: (808)474-0330, Bldg 213/1 <ckarelitz@ns00.phnsy.navy.mil>
To: lfragoso

Hi Commander Fragoso. I would greatly appreciate it if your office could fill in a few gaps in the Hunters Point HRA. If you have documents of value, please fax them to me at 808-471-3946.

After going through volumes of publications, including the RASO report on NRDL (Feb 1995), the following info either could not be found or is hazy:

1. There are indications that radiography took place at HPA but no records of NRMPs could be found for such operations. Were/was there such licenses. If so, how many, and what were the NRMP numbers?

2. I have compiled info on the following NRMPs at HPA. Were there any others?

4-364-8/4-1039-3; 4-364-9/4-1039-2; 4-13488-1/4-487-3; 4-487-7;
4-487-8; 4-487-9; SNM-379; SMB-376; SNM-35

3. Are there any existing NRMPs at HPA or can we state that they all (not just NRDL licenses) have been terminated?

4. Who provided immediate controls over NRMP sources at HPA for the use and disposal of the licensed material (did Mare Island do this or was there an on-site command. office, etc.)?

04-13488-01 ✓
4-487-6
4-487-7

4-487-3 ✓

4-487-9 ✓

4-487-8

~~SNM-379~~

SNM 35 ✓

SMB 376 ✓

04-01039-02 ✓

Thanks for whatever help you can provide.

Charles Karelitz

X Rad

AEC 04-13597-01 Bldg 113 A

Terminated Mar 15, 1974

Issued ~~8 May 1972~~ Mar 5, 1970

Calibration
04-13597-02

Terminated 9 Jan 1975

Issued 5 Mar 1970

4-364-25

4 364-06/09

04-364-07

NAVSEADET RASO CORRESPONDENCE ROUTE SHEET

ASSIGNED ACTION:

RASO CONTROL NO: 942801
 DATE RECEIVED: 12/22/94

ORIGINATOR: NRC REG IV
 FILE:
 SER:
 DATE: 12/21/94
 DTC:

SUBJECT: NRC LICENSE NO 04-13597-02 FOR HUNTERS POINT NAVAL SHIPYARD

COMMENTS: FAX COPY FROM DEAN CHANEY

ROUTING: 00/02/02A

ACTION ASSIGNED: *J*
 DUE DATE:

ACTION TAKEN:

CORRESPONDENCE/MESSAGE/PHONCON(W/WITTENRECORD IN FILE) (IF RASO ACTION):

DATE SUBMITTED FOR TYPING: _____

FILE: 5104/_____/_____/_____

RCN: 942801/_____/_____/_____

SERIAL NO.: SUBJECT CODE: _____/ORIGINATOR CODE: _____/SERIAL NO.: _____

DTG: _____

COMMENTS: (INDICATE ACTION TAKEN BY COMMANDS OTHER THAN RASO)

[Large empty area for handwritten comments]

DOCUMENT CHOP:

CODES:							
SIG: 00							

*Rec'd 10 Pgs
in 4/22 03B*



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV/WALNUT CREEK FIELD OFFICE**

1450 MARIA LANE, SUITE 310
WALNUT CREEK, CALIFORNIA 94596

FACSIMILE TRANSMITTAL

December 21, 1994

TO: Cmdr. LENO FRAESO, RASO, US NAVY
Phone: (804) 887-4692

FAX NUMBER: (804) 887-3235

Verification No. () - same as phone

Number of pages in this transmittal: 10

FROM: H. Dean Chaney, Sr. Radiation Specialist
(Materials Branch/Fuel Facility and Decommissioning)

Phone: (510) 975-0229/0200

FAX: (510) 975-0381/0970 (Primary is X-0381)

INTERNET:hdc@nrc.gov

REMARKS: Leno, here is the info on Hunters Point license 04-13597-02. Let me know ASAP if you will need anything else from the files. I need to get them sent back to ORAU.

Have a nice holiday season.....Dean

DEC-21-94 WED 15:16

NRC RIV WCFO MATERIALS B FAX NO. 5109750381

P. 02

(4.73)
10 CFR 30

BYPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

Amendment No. 02

Department of the Navy
Hunters Point Naval Shipyard
San Francisco, California
94135

License Number 04-13597-02 is hereby terminated.



For the U. S. Atomic Energy Commission

Authorized By
[Signature]

Materials Branch

Directorate of Licensing
Washington, D. C. 20545

Date JAN 9 1975

21B 1/9/75

NB/c E 1

U. S. ATOMIC ENERGY COMMISSION
YPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

Amendment No. 01

Department of the Navy
Hunters Point Naval Shipyard
San Francisco, California
94135

In accordance with letter dated September 27, 1972, License Number 04-13597-02
is amended as follows:

Subitem 8.A. is amended to read:

8.A. 2 sources not to exceed
130 curies each

NOV 9 1972

Date _____

REB
P2B/ger

For the U. S. Atomic Energy Commission

Original Signed By

Robert E. Brinkman

by Materials Branch

Division of Materials Licensing
Washington, D. C. 20545

J

FORM AEC-374
7-68
16 CFR 30

U. S. ATOMIC ENERGY COMMISSION
BYPRODUCT MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Parts 30, 32, 33, 34, and 35, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer and import byproduct material listed below; and to use such byproduct material for the purpose(s) and at the place(s) designated below. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

Licensee		
1. Department of the Navy Hunters Point Naval Shipyard		3. License number 04-13597-02
2. San Francisco, California 94135		4. Expiration date March 31, 1975
		5. Reference No.
6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioac- tivity which licensee may possess at any one time
A. Cesium 137	A. Oak Ridge National Laboratory Sealed Source	A. 1 source of 128 curies

9. Authorized use

A. For use in Model AN/UDM-1A Radiac Calibrator for calibration of instruments.

CONDITIONS

- 10. Byproduct material may only be used at the licensee's address stated in Item 2 above.
 - 11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation."
 - 12. Byproduct material shall be used by, or under the supervision of, individuals certified or qualified by the Radiological Protection Officer.
- Sealed sources containing byproduct material shall not be opened.

For the U. S. Atomic Energy Commission

Original Signed by

Nathan Bessin

by Isotopes Branch

Division of Materials Licensing
Washington, D. C. 20545

Date MAR 5 1970

NB 3/5/70

NB/fg

BYPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

(continued)

- 14.A.(1) Each sealed source containing byproduct material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, the sealed source shall not be put into use until tested.
- (2) The periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.
- B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the Director, Division of Materials Licensing, U. S. Atomic Energy Commission, Washington, D. C., 20545, describing the equipment involved, the test results, and the corrective action taken. A copy of such report shall also be sent to the Director, Region V, Division of Compliance, USAEC, 2111 Bancroft Way, Berkeley, California, 94704.

For the U.S. Atomic Energy Commission

Original Signed by

Nathan Bascin

by Isotopes BranchDivision of Materials Licensing
Washington, D. C. 20545Date MAR 5 1970

NB 3/5/70

NB/fg

EC-274A
4-231

U. S. ATOMIC ENERGY COMMISSION

Page 3 of 3 Pages

BYPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

14. D. Tests for leakage and/or contamination shall be performed by Richard A. Ascano in accordance with procedure in application dated January 16, 1970, as amended February 12, 1970, or by other persons specifically authorized by the Commission or an Agreement State to perform such services.
15. Except as specifically provided otherwise by this license, the licensee shall possess and use byproduct material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated January 16, 1970, as amended February 12, 1970.

For the U. S. Atomic Energy Commission

Original Signed by

Nathan Baccin

by Isotopes BranchDivision of Materials Licensing
Washington, D. C. 20545Date MAR 5 1970

NB 3/5/70

NB/eg



DEPARTMENT OF THE NAVY
HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA 94135

IN REPLY REFER TO:
380-430
9900/10
14 JUN 1974

U. S. Atomic Energy Commission
Division of Material Licensing
Materials Branch
Washington, D. C. 20545

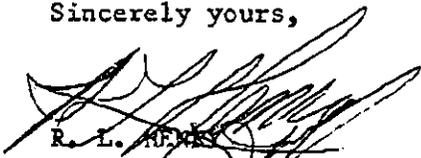
VIA: Commander (Code 5044)
Naval Electronic Systems Command
Washington, D. C. 20360

Gentlemen:

Due to Shipyard closure, this activity is no longer in need of by-product material held under AEC license no. 04-13597-02. All Cesium 137 sources have been shipped to Naval Ordnance Laboratory, White Oak, Silver Springs, MD under their AEC license no. 19-00166-10. Wipe tests indicate no detectable Beta-Gamma activity is present on the associated equipment or facilities.

It is requested that AEC license no. 04-13597-02 be terminated and that a copy of the termination notice be forwarded to Hunters Point Naval Shipyard, c/o CDR R. L. Henry, Code 380.

Sincerely yours,


R. L. HENRY
Commander, USN

Production Officer
By direction of the Commander
Hunters Point Naval Shipyard

53997

SEC-314
(1-74)

UNITED STATES ATOMIC ENERGY COMMISSION

CERTIFICATE OF DISPOSITION OF MATERIALS
(ALL BLOCKS MUST BE COMPLETED)

LICENSEE NAME AND ADDRESS:

Department of the Navy
Hunters Point Naval Shipyard

San Francisco, California 94135

LICENSE NUMBER:

04-13597-02

LICENSE EXPIRATION DATE:

March 31, 1975

The licensee and any individual executing this certificate on behalf of the licensee certify that (check appropriate item(s) below)

- A. No materials have been procured by licensee.
- B. All materials procured and/or possessed by licensee under license number shown above, have been:

Transferred to: Naval Ordnance Laboratory, White Oak,

Silver Spring, Maryland 20910

which has license number: 19-00166-10

C. Disposed of in compliance with 10 CFR 20.

D. Licensed under license number _____ issued by:

_____, an Agreement State pursuant to Section 274 of the Atomic Energy Act of 1954, as amended.

REMARKS: (if additional space is needed, use reverse side)

L. G. Kearney
 L. G. Kearney, Radiac Coordinator
 Signature of Certifying Official
 8/12/74
 Date

Please return to:
 U.S. Atomic Energy Commission
 Office of Regulation
 Directorate of Licensing
 Washington D.C. 20545

53997

ENCLOSURE (1)



DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
200 STOVALL STREET
ALEXANDRIA, VA 22332

IN REPLY REFER TO
0422B/WJM
5100.00/8
Ser 581
2 JAN 1975

U. S. Atomic Energy Commission
Directorate of Licensing
Materials Branch
Washington, D.C. 20545

Gentlemen:

We endorse the attached request to terminate Byproduct Material License No. 04-13597-02 issued to Hunters Point Naval Shipyard.

Sincerely,

A handwritten signature in cursive script that reads "R. E. Carlton".

R. E. CARLTON
By direction

Attachment: NAVSHIPYD Hunter ltr 380-430 9900/10 of 14 Jun 1974 w/FIRST
ENDORSEMENT NAVELECSYSCOM ltr 48053 GNM 9900 Ser 732-4805
dtd 20 Dec 1974

Copy to:
NAVELECSYSCOM, Code 48053

**COPIES SENT TO
REGULATORY OPERATIONS**

53997



DEPARTMENT OF THE NAVY
NAVAL ELECTRONIC SYSTEMS COMMAND
WASHINGTON, D. C. 20360

IN REPLY REFER TO

48053:GNM:mar
9900
Ser. 732-4805
LJ

FIRST ENDORSEMENT ON NAVSHIPYD HUNTERS POINT LTR 380-430 9900/10 14 JUNE 74

From: Commander, Naval Electronic Systems Command
To: U. S. Atomic Energy Commission
Directorate of Licensing, Material Branch
Via: Commander, Naval Facilities Engineering Command

Subj: AEC Byproduct Material License No. 04-13597-02

Ref: (a) NAVELEX ltr 9900 Ser 397-48053 dtd 25 June 1974 (NOTAL)

Encl: (1) Form AEC-314 (1-74)

1. Basic letter contains a request to terminate subject license.
2. Supplemental material requested by reference (a) is covered in enclosure (1). This material includes the completed, signed and dated Certificate of Disposition of Materials (i.e. the AN/UDM-1A Calibrator containing the 120 curies of Cesium-137) used in the Radiac Repair Facility at the Shipyard.
3. This Command recommends approval of the request for an amendment to terminate License No. 04-13597-02, which authorized the calibration sources used in the Radiac Repair Facility, due to Shipyard closure.

G. N. Mahaffey
G. N. MAHAFFEY
By direction

Copy to:

NAVSEA Industrial Support Office (Code 1700) San Francisco
NAVELEXSYSENGCEN VALLEJO (Code 034)

53997

0422B WJM
0422 RC
K

0422B/WJM
5100.00/8
Ser 581

2 JAN 1975

U. S. Atomic Energy Commission
Directorate of Licensing
Materials Branch
Washington, D.C. 20545

Gentlemen:

We endorse the attached request to terminate Byproduct Material License
No. 04-13597-02 issued to Hunters Point Naval Shipyard.

Sincerely,

R. L. MORRIS
By Morris

Attachment: NAVSHIPYD Hunter 1tr 380-430 9900/10 of 14 Jun 1974 w/FIRST
ENDORSEMENT NAVELECSYSCOM 1tr 48053 GNM 9900 Ser 732-4805
dtd 20 Dec 1974

Copy to:
NAVELECSYSCOM, Code 48053

Blind copy to:
042 04RF 0422 0422B
P.By: WJMorris:0422B:12/30/74
T.By: mlh: 12/30/74



DEPARTMENT OF THE NAVY
NAVAL ELECTRONIC SYSTEMS COMMAND
WASHINGTON, D. C. 20360

IN REPLY REFER TO

48053:GNM:mar
9900
Ser. 732-4805
DEC 14 1974

FIRST ENDORSEMENT ON NAVSHIPYD HUNTERS POINT LTR 380-430 9900/10 14 JUNE 74

From: Commander, Naval Electronic Systems Command
To: U. S. Atomic Energy Commission
Directorate of Licensing, Material Branch
Via: Commander, Naval Facilities Engineering Command

Subj: AEC Byproduct Material License No. 04-13597-02

Ref: (a) NAVELEX ltr 9900 Ser 397-48053 dtd 25 June 1974 (NOTAL)

Encl: (1) Form AEC-314 (1-74)

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2. Supplemental material requested by reference (a) is covered in enclosure (1). This material includes the completed, signed and dated Certificate of Disposition of Materials (i.e. the AN/UDM-1A Calibrator containing the 120 curies of Cesium-137) used in the Radiac Repair Facility at the Shipyard.
3. This Command recommends approval of the request for an amendment to terminate License No. 04-13597-02, which authorized the calibration sources used in the Radiac Repair Facility, due to Shipyard closure.

G. N. Mahaffey
G. N. MAHAFFEY
By direction

Copy to:
NAVSEA Industrial Support Office (Code 1700) San Francisco
NAVELEXSYSENGCEN VALLEJO (Code 034)



DEPARTMENT OF THE NAVY
HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA 94135

IN REPLY REFER TO:
380-430
9900/10
14 JUN 1974

U. S. Atomic Energy Commission
Division of Material Licensing
Materials Branch
Washington, D. C. 20545

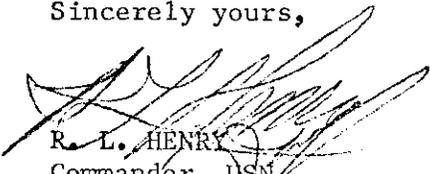
VIA: Commander (Code 5044)
Naval Electronic Systems Command
Washington, D. C. 20360

Gentlemen:

Due to Shipyard closure, this activity is no longer in need of by-product material held under AEC license no. 04-13597-02. All Cesium 137 sources have been shipped to Naval Ordnance Laboratory, White Oak, Silver Springs, MD under their AEC license no. 19-00166-10. Wipe tests indicate no detectable Beta-Gamma activity is present on the associated equipment or facilities.

It is requested that AEC license no. 04-13597-02 be terminated and that a copy of the termination notice be forwarded to Hunters Point Naval Shipyard, c/o CDR R. L. Henry, Code 380.

Sincerely yours,


R. L. HENRY

Commander, USN
Production Officer
By direction of the Commander
Hunters Point Naval Shipyard

AEC-314
(1-74)

UNITED STATES ATOMIC ENERGY COMMISSION

CERTIFICATE OF DISPOSITION OF MATERIALS
(ALL BLOCKS MUST BE COMPLETED)

LICENSEE NAME AND ADDRESS:

Department of the Navy
Hunters Point Naval Shipyard
San Francisco, California 94135

LICENSE NUMBER:

04-13597-02

LICENSE EXPIRATION DATE:

March 31, 1975

The licensee and any individual executing this certificate on behalf of the licensee certify that (check appropriate item(s) below)

A. No materials have been procured by licensee.

B. All materials procured and/or possessed by licensee under license number shown above, have been:

Transferred to: Naval Ordnance Laboratory, White Oak,

Silver Spring, Maryland 20910

which has license number: 19-00166-10

C. Disposed of in compliance with 10 CFR 20.

D. Licensed under license number _____ issued by:

_____, an Agreement State pursuant to Section 274 of the Atomic Energy Act of 1954, as amended.

REMARKS: (if additional space is needed, use reverse side)

L. G. Kearney
L. G. Kearney, Radiac Coordinator
Signature of Certifying Official
3/12/74
Date

Please return to:
U.S. Atomic Energy Commission
Office of Regulation
Directorate of Licensing
Washington D.C. 20545

ENCLOSURE (1)

U. S. ATOMIC ENERGY COMMISSION
BYPRODUCT MATERIAL LICENSE

This Copy Is For Your Files

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Parts 30, 32, 33, 34, and 35, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer and import byproduct material listed below; and to use such byproduct material for the purpose(s) and at the place(s) designated below. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

Licensee		
<p>1. Department of the Navy Hunters Point Naval Shipyard</p> <p>2. San Francisco, California 94135</p>		3. License number 04-13597-02
		4. Expiration date March 31, 1975
		5. Reference No.
6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioac- tivity which licensee may possess at any one time
A. Cesium 137	A. Oak Ridge National Laboratory Sealed Source	A. 1 source of 128 curies

9. Authorized use

A. For use in Model AN/UDM-1A Radiac Calibrator for calibration of instruments.

CONDITIONS

- 10. Byproduct material may only be used at the licensee's address stated in Item 2 above.
- 11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation."
- 12. Byproduct material shall be used by, or under the supervision of, individuals certified or qualified by the Radiological Protection Officer.
- 13. Sealed sources containing byproduct material shall not be opened.

BYPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

(continued)

- 14.A.(1) Each sealed source containing byproduct material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, the sealed source shall not be put into use until tested.
- (2) The periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.
- B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the Director, Division of Materials Licensing, U. S. Atomic Energy Commission, Washington, D. C., 20545, describing the equipment involved, the test results, and the corrective action taken. A copy of such report shall also be sent to the Director, Region V, Division of Compliance, USAEC, 2111 Bancroft Way, Berkeley, California, 94704.

U. S. ATOMIC ENERGY COMMISSION
BYPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

14. D. Tests for leakage and/or contamination shall be performed by Richard A. Ascano in accordance with procedure in application dated January 16, 1970, as amended February 12, 1970, or by other persons specifically authorized by the Commission or an Agreement State to perform such services.
15. Except as specifically provided otherwise by this license, the licensee shall possess and use byproduct material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated January 16, 1970, as amended February 12, 1970.

For the U. S. Atomic Energy Commission

Nathan Bassin
by Isotopes BranchDivision of Materials Licensing
Washington, D. C. 20545

Date

MAR 5 1970

U. S. ATOMIC ENERGY COMMISSION
BYPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

Amendment No. 01

This Copy is For Your Files

Department of the Navy
Hunters Point Naval Shipyard
San Francisco, California
94135

In accordance with letter dated September 27, 1972, License Number 04-13597-02
is amended as follows:

Subitem 8.A. is amended to read:

8.A. 2 sources not to exceed
130 curies each

FROM:
TO: HUNTERS POINT Naval Shipyard

1. FORWARDED FOR RECORDS

..... *G. N. Mahaffey*
SIGNATURE
G. N. MAHAFFEY

For the U. S. Atomic Energy Commission

Robert B. Brubaker

by Materials Branch

Division of Materials Licensing
Washington, D. C. 20545

Date NOV 9 1972

HUNTERS POINT NAVAL SHIPYARD
USAEC LICENSE NO. 04-13597-02

Encl (2)

U. S. ATOMIC ENERGY COMMISSION
BY-PRODUCT MATERIAL LICENSE
Supplementary Sheet

This Copy Is For Your Files

License Number 04-13597-02

Department of the Navy
Hunters Point Naval Shipyard
San Francisco, California
94135

Amendment No. 01

In accordance with letter dated September 27, 1972, License Number 04-13597-02
is amended as follows:

Subitem 8.A. is amended to read:

8.A. 2 sources not to exceed
130 curies each

FROM:
TO: HUNTERS POINT Naval Shipyard

1. FORWARDED FOR YOUR RECORDS

G. N. Mahaffey
SIGNATURE
G. N. MAHAFFEY

Date NOV 9 1972

For the U. S. Atomic Energy Commission
Robert E. Boilman
by Materials Branch

U. S. ATOMIC ENERGY COMMISSION
BYPRODUCT MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Parts 30, 32, 33, 34, and 35, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer and import byproduct material listed below; and to use such byproduct material for the purpose(s) and at the place(s) designated below. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

Licensee		
1. Department of the Navy Hunters Point Naval Shipyard		3. License number M-13597-02
2. San Francisco, California 94135		4. Expiration date March 31, 1975
		5. Reference No.
6. Byproduct material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioac- tivity which licensee may possess at any one time
A. Cesium 137	A. Oak Ridge National Laboratory Sealed Source	A. 1 source of 128 curies

9. Authorized use

A. For use in Model AN/UDM-1A Radiac Calibrator for calibration of instruments.

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12. Byproduct material shall be used by, or under the supervision of, individuals certified or qualified by the Radiological Protection Officer.
13. Sealed sources containing byproduct material shall not be opened.

YPROL T MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

(continued)

- 14.A.(1) Each sealed source containing byproduct material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, the sealed source shall not be put into use until tested.
- (2) The periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.
- B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the Director, Division of Materials Licensing, U. S. Atomic Energy Commission, Washington, D. C., 20545, describing the equipment involved, the test results, and the corrective action taken. A copy of such report shall also be sent to the Director, Region V, Division of Compliance, USAEC, 2111 Bancroft Way, Berkeley, California, 94704.

BYPRODUCT MATERIAL LICENSE

Supplementary Sheet

License Number 04-13597-02

14. D. Tests for leakage and/or contamination shall be performed by Richard A. Ascano in accordance with procedure in application dated January 16, 1970, as amended February 12, 1970, or by other persons specifically authorized by the Commission or an Agreement State to perform such services.

15. Except as specifically provided otherwise by this license, the licensee shall possess and use byproduct material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application dated January 16, 1970, as amended February 12, 1970.

For the U. S. Atomic Energy Commission

Date MAR 5 1970

by isotopes Branch
Division of Materials Licensing
Washington, D. C. 20545

5

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Ser 538-05163
10 OCT 1972

FIRST ENDORSEMENT On Hunters Point Naval Shipyard Letter 740/JGP:dh
of 27 September 1972

From: Commander, Naval Electronic Systems Command
To: Chief, Materials Branch
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Subj: AEC Byproduct Material License No. 40-13597-02

1. Basic letter contains a request to amend subject license for authorization to possess an additional 120 curie sealed source of Cesium-137 for an AN/UIM-1A Radiac Calibrator.
2. Authorization for two Cesium-137 sources will permit the Radiac Repair Facility at the Shipyard to have a unit in storage pending transfer to a Naval facility (e.g. Naval Ordnance Laboratory, White Oak (NOL/WO)) for maintenance and/or calibration.
3. Present plans are to ship a 120 curie Cesium-137 source in its Radiation Source Chamber from NOL/WO, which is covered under license #19-00166-10, to the Radiac Repair Facility and return the unit presently in use in the Radiac Calibrator at the Radiac Repair Facility in the shipyard to NOL/WO.
4. It is recommended that the request be approved and an amendment to license #04-13597-02 be issued. The availability of a second source in temporary storage at the Radiac Repair Facility during the transfer period will reduce "down-time" of the calibration facility and permit the processing of Radiac Sets on schedule.

Copy to:
BUMED (Code 74)
NAVSHIPYD, HUNTERS POINT (Code 740) and L. Kearney, Radiac Coordinator

A. R. Mahaffey
A. R. MAHAFFEY
By direction

740/JGP:dh
27 September 1972

From: Commander, Hunters Point Naval Shipyard
To: Director, Division of Materials Licensing
Isotopes Branch
U.S. Atomic Energy Commission
Washington, D.C. 20545

DATE
AND
INITIALS CODE

JGP 191.3

Via: Commander, Naval Electronic Systems Command (Code 05163)

Subj: AEC Byproduct Material License No. 04-13597-02; amendment of

1. This letter is submitted to request amendment to the subject license to permit possession of two Cesium 137 sources. These sources will consist of a new Cesium 137 sealed source of 120 curies nominal strength and the existing Cesium 137 sealed source having had a maximum strength of 128 curies.

2. The new source, Oak Ridge National Laboratory sealed source ORNL ENG. No. BRD 1152A, will be received and stored in an exposure device in the existing calibration room. It will be used to replace the existing source in the AN/UDM-1A calibration device. The existing source will then be temporarily stored in the calibration room pending final disposition.

M. S. BALIS
By direction

Copy to:
Code 100
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→ 108:JGP:jj
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FEB 19 1970

U. S. Atomic Energy Commission
Division of Materials Licensing
Washington, D. C. 20545

Dear Mr. Bassin:

This will acknowledge receipt of your letter of 29 January 1970. The information you requested is provided below:

1. The following information is submitted with regard to the training and experience of Mr. J. G. Peathas.

(a) His involvement in radiation work at the shipyard began in September 1968, with participation in radiation protection under the technical supervision of the Health Physics Branch of the Shipyard. Responsibilities and duties were to conduct a radiation protection program in accordance with the Navy's Radiation Health Protection Manual NAVMED P-5055.

This included the following duties:

- (1) Detecting, evaluating and formulating controls for personnel exposures to ionizing radiation and training in radiological safety.
- (2) Laboratory services and personnel dosimetry.
- (3) Maintaining exposure records.
- (4) Maintaining an inventory of shipyard sources of existing and planned procedures, operations, and facilities to determine the adequacy of controls.

(b) He attended two U. S. Public Health Service courses in February and March of 1969. The courses were entitled Basic Radiological Health and Occupational Radiation Protection. Subjects covered in this course included Radiation Fundamentals, Survey Instruments, Laboratory Counting Instruments, Biological Effects of Ionizing Radiation, Radiation Protection and Shielding, Exposure Criteria and Evaluation, Leak Testing, Contamination Monitoring, Decontamination, and AEC Licensing and Regulations. The courses included both laboratory and lecture sessions. In addition, Mr. Peathas attended sessions for qualification and certification of shipyard radiographers and radiax calibration employees, as outlined in the license applications.

(c) As a naval officer he was responsible for radiation protection in connection with a radiography source (Cobalt 60) and medical X-rays. Specific responsibilities included monitoring, surveys, and provisions for personnel dosimetry.

Yellow

(d) Radioactive materials were not personally used or handled except those incident to his duties and responsibilities in the field of radiological health protection.

2. The persons conducting the training described in the application will be Mr. J. G. Psathas and Mr. S. Depta, Electronics Mechanic. The training and experience of Mr. Psathas is included in Paragraph 1 above. Mr. S. Depta has approximately sixteen years of experience in radiac calibration and radiation related work. Mr. Depta has been employed in the Radiac Calibration Section of the shipyard since 1961. Prior to this, he worked with radiation materials in the U. S. Army for about seven years. While in the Army Mr. Depta completed Nuclear Course NT-21 and Assembly Course ABE-40, dealing with nuclear physics and atomic weapons in the shipyard, he has been qualified and certified in accordance with the training program outlined in the license application. In 1966, Mr. Depta completed a fifteen hour training course entitled Principles of Radiation Safety. This course was part of the training given to nuclear workers at the Mare Island Naval Shipyard in Vallejo.

3. The following employees have been qualified and certified in accordance with the training plan and terms of the 04-00364-05 License for the cesium 137 source. The means used to designate these people is by training and certification.

<u>Name</u>	<u>Rate</u>	<u>Years Experience in Radiac Calibration Section</u>
Amino, W. S.	Limited, Electronic Mech.	4.5
Craig, W. R.	Electronic Mechanic	2.5
Depta, S.	Electronic Mechanic	9
Haas, M. H.	Electronic Mechanic	3

Mr. G. Menize is the supervisor of the Radiac Section and has been qualified and certified under provisions of License No. 04-00364-05. He has been supervisor of the Radiac Section, having cognizance of the cesium 137 source, since mid 1969. Prior to this time he attended a four week joint armed services course entitled Maintenance of Radiac Equipment. This course included training in basic nuclear physics, dosage devices, medical aspects of nuclear radiation, handling and storage of radioactive material, monitoring, decontamination, shielding, AEC license requirements, and characteristics and operation of the AN/UDM-1A cesium 137 device.

4. Leak tests of the cesium 137 source are conducted by R. Ascano, Radiation Monitor in the Industrial Hygiene Division. Evaluations are made with a Baird Atomic, Model 146, General Purpose Scaler and a Baird Atomic Well Counter, No. 810C.

108:JGP:j1

9900/9

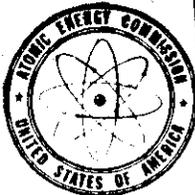
We trust that the above information will complete your requirements for the license application.

Sincerely,

Copy to:
Code 967

→ 108

L. B. MAYER
Captain, USN
Shipyard Commander



UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

JAN 29 1970

DML:IB:NB

Commander
Hunters Point Naval Shipyard
San Francisco, California 94135

Dear Sir:

We have reviewed the application submitted by the Shipyard for a license for the cesium 137 sealed source used in the Model AN/UDM-1A radiac calibrator. In order to continue review of the application, we need the following additional information:

1. A more complete description of the training and experience of Mr. J. G. Psathas. The information presented should include the length of time which Mr. Psathas has been involved in radiation work at the San Francisco Bay Naval Shipyard and his duties during this time, a summary of his responsibilities during the time he was a Naval officer, and the extent to which he has personally used or handled radioactive material.
2. The name of the person or persons who conduct the training program described in the application and the training and experience in radiation of each such person.
3. The names and training and experience of each of the persons designated as supervisory qualified users and the means used to designate persons for this function.
4. The name of the person or persons who conduct the leak tests and the make and model number of the instrument used for measurement.

Sincerely,

A handwritten signature in cursive script that reads "Nathan Bassin".

Nathan Bassin
Isotopes Branch
Division of Materials Licensing

SAN FRANCISCO BAY NAVAL SHIPYARD

VALLEJO, CALIFORNIA 94592

H 730 (H 108)

IN REPLY REFER TO:

9900/9-10

JAN 19 1970

From: Commander, San Francisco Bay Naval Shipyard
To: Director, Division of Materials Licensing
Isotopes Branch
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subj: AEC Byproduct Material License Nos. 04-00364-05 and 04-00364-06;
Application for amendment to and replacement of

Ref: (a) Code of Federal Regulations, Title 10, AEC, Parts 30 and 34

Encl: (1) Form AEC-313, Application for Byproduct Material License and Attachments (Calibration) for Hunters Point Naval Shipyard
(2) Form AEC-313, Application for Byproduct Material License and Attachments (Calibration) for Mare Island Naval Shipyard
(3) Form AEC-313R, Application for Byproduct Material License-- Use of Sealed Sources in Radiography and Attachments for Hunters Point Naval Shipyard
(4) Form AEC-313R, Application for Byproduct Material License-- Use of Sealed Sources in Radiography and Attachments for Mare Island Naval Shipyard

1. In accordance with reference (a) applications for amendment and replacement of subject licenses effective 1 February 1970 are forwarded as enclosures (1), (2), (3), and (4).

2. The amendments for Mare Island and replacements for Hunters Point are required due to a reorganization wherein these two sites comprising San Francisco Bay Naval Shipyard have been redesignated to become Hunters Point Naval Shipyard and Mare Island Naval Shipyard on 1 February 1970.

3. Complete applications are being submitted to assure future clarity; however, these applications reflect no substantive change from the subject licenses with respect to facilities, operating personnel, and procedures at the respective sites, except for:

a. the inclusion of procedures for the unattended exposure of a sealed source during calibration of high range dosimeters at Mare Island, (Paragraph J. 1 and 2, K.1.a., and L.12. and 13. of Attachment C to enclosure (2))

b. the addition of Section XV, Recovery Procedures, to Attachment B of enclosure (3),

c. the addition of Tech Ops Model 650 Source Changer for IR-192 radiographic sources under item 5 of enclosures (3) and (4).

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4. Administrative changes in designation viz. organization codes, telephone and building numbers as well as named successors in operating positions are made directly to operating procedures on a continuing basis as they occur.

5. The Shipyard Ionizing Radiation Control Committee has reviewed this application and recommends approval.

Copy to:(w/encl)

S/N. Frankenberger

Code H133B (2) w/encl (3)
M133B (2) w/encl (4)
H967 w/encl (1)
M967 w/encl (2)
M108 w/encl (2) & (4)
H730(H108) w/encl (1) & (3)

H130 (w/o encl)
M130 "
H300 "
M300 "
M720 "
H700 "

UNITED STATES ATOMIC ENERGY COMMISSION
APPLICATION FOR BYPRODUCT MATERIAL LICENSE

INSTRUCTIONS. - Complete Items 1 through 16 if this is an initial application or an application for renewal of a license. Information contained in previous applications filed with the Commission with respect to Items 8 through 15 may be incorporated by reference provided references are clear and specific. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail two copies to: U.S. Atomic Energy Commission, Washington, D.C., 20545, Attention: Isotopes Branch, Division of Materials Licensing. Upon approval of this application, the applicant will receive an AEC Byproduct Material License. An AEC Byproduct Material License is issued in accordance with the general requirements contained in Title 10, Code of Federal Regulations, Part 30, and the Licensee is subject to Title 10, Code of Federal Regulations, Part 20.

1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital, person, etc. Include ZIP Code.) (b) STREET ADDRESS(ES) AT WHICH BYPRODUCT MATERIAL WILL BE USED. (If different from 1 (a). Include ZIP Code.)

Department of the Navy
Hunters Point Naval Shipyard
San Francisco, Calif. 94135

Hunters Point Naval Shipyard
San Francisco, Calif. 94135

2. DEPARTMENT TO USE BYPRODUCT MATERIAL

Production Department
Hunters Point Naval Shipyard

3. PREVIOUS LICENSE NUMBER(S). (If this is an application for renewal of a license, please indicate and give number.)

Replaces License #04-00364-05

4. INDIVIDUAL USER(S). (Name and title of individual(s) who will use or directly supervise use of byproduct material. Give training and experience in Items 8 and 9.)

Byproduct materials shall be used by, or under the direct personal supervision of, those individuals who have been certified as qualified by the Radiological Protection Officer.

5. RADIATION PROTECTION OFFICER (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)

**J. G. Psathas, Radiological
Protection Officer**

(See Attachment A for resume)

6. (a) BYPRODUCT MATERIAL. (Elements and mass number of each.)

A. Cesium 137

(b) CHEMICAL AND, OR PHYSICAL FORM AND MAXIMUM NUMBER OF MILLICURIES OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)

**A. ORNL sealed source
Drwg. No. 2339 A**

**A. 1 source of approximately
128,000 mCi each**

7. DESCRIBE PURPOSE FOR WHICH BYPRODUCT MATERIAL WILL BE USED. (If byproduct material is for "human use," supplement A (Form AEC-313a) must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)

A. Byproduct material A is to be stored and used in Model AN/UDM-1A, set for calibrating ionizing radiation detection instruments and devices.

Enclosure (1)

TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEM 4 (Use supplemental sheets if necessary)

8. TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	ON THE JOB (Circle answer)		FORMAL COURSE (Circle answer)	
			Yes	No	Yes	No
a. Principles and practices of radiation protection	See Attachment A					
b. Radioactivity measurement standardization and monitoring techniques and instruments						
c. Mathematics and calculations basic to the use and measurement of radioactivity						
d. Biological effects of radiation						

9. EXPERIENCE WITH RADIATION. (Actual use of radioisotopes or equivalent experience.)

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		See Attachment A		

10. RADIATION DETECTION INSTRUMENTS (Use supplemental sheets if necessary)

TYPE OF INSTRUMENTS (Include make and model number of each)	NUMBER AVAILABLE	RADIATION DETECTED	SENSITIVITY RANGE (mr/hr)	WINDOW THICKNESS (mg/cm ²)	USE (Monitoring, surveying, measuring)
AN/PDR-27 ()		Beta Gamma	0-500 mR/hr	3.5-4.0	Monitoring & Surveying
AN/PDR-43 ()		"	0-500 R/hr	3-4	"

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE. **Methods and standards, described in manuals and NAVELEX Instructions for calibration of instruments, are applied to calibrate the instruments not less frequently than every six months.**

12. FILM BADGES, DOSIMETERS, AND BIO ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.) **Film badges and self-reading dosimeters are used. Dosimeter readings are recorded daily. Film badges are routinely issued and related records processed monthly by the Medical Department. If a suspected excessive exposure or other nonroutine incident occurs in the interim, special processing is done.**

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS IN DUPLICATE

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) No **See Attachment B**

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source. **See Attachment C**

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise, submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved. **If waste disposal is required, an AEC or agreement state contractor will be engaged.**

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PART 30, AND THAT ALL INFORMATION CONTAINED HEREIN, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

Applicant named in item 1

Date _____

By: _____

Title of certifying official: **Enclosure ()**

WARNING. — 18 U. S. C., Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

ITEM

5. Radiation Protection Officer

Mr. J. G. Psathas - Head, Industrial Hygiene Division, 1968 to present with technical surveillance responsibility for Radiography sources since March of 1969. San Francisco Bay Naval Shipyard, San Francisco; Head, Industrial Hygiene Branch or Section 1966-1968, SFBNS, San Francisco. B. S. Chemical Engineering, West Virginia University, West Virginia; U.S. Public Health Service courses, Basic Radiological Health, 1969 and Occupational Radiation Protection, 1969. Total of 10 years of Industrial Hygiene experience; four of these with the State of West Virginia; three years as an officer in the U. S. Navy including responsibility for radiation protection; three years at SFBNS with involvement in health physics starting in 1969. Two years experience in air pollution studies and six years as a chemical engineer.

ATTACHMENT A
SUPPLEMENT I

Enclosure (1)

HUNTERS POINT NAVAL SHIPYARD
TRAINING PROGRAM
for
USERS OF RADIAC REPAIR FACILITY
CALIBRATION SOURCES

ITEMS 8 and 9
ATTACHMENT A
SUPPLEMENT 2

Enclosure (1)

A. INITIAL TRAINING

1. Classroom instruction in

a. Radiation Detection Instrumentation

- (1) Operation of Instruments
- (2) Calibration and operation check
- (3) Limitations on use
- (4) Types required
- (5) Proper use of
- (6) Value of radiation safety
- (7) Interpretation of readings
- (8) Survey techniques
- (9) Use of film badges and pocket dosimeters

b. Fundamentals of radiation protection

- (1) Characteristics of radiation
- (2) Units of dose and radioactivity
- (3) Hazards of excessive exposure
- (4) Levels from licensed material
- (5) Methods of controlling dose (time, distance, shielding)

c. Instruction on calibration devices and storage equipment

- (1) Steps to be followed during operation of the calibration devices
- (2) Construction features of calibration devices
- (3) Possible malfunctions of calibration devices and how detected and corrected
- (4) Radiation levels to be expected from calibration devices and storage containers when sources are exposed and secured and limits on radiation levels
- (5) Locking and securing of calibration devices and storage equipment
- (6) Storage precautions
- (7) Emergency action and notifications

d. Instructions on control of sources

- (1) Procedure for returning source to manufacturer
- (2) Inventory
- (3) Utilization logs

e. Restricted and radiation areas

- (1) Control of access to
- (2) Posting
- (3) Limits at perimeters
- (4) Security of
- (5) Warning lights and signs

- f. Instruction in 10CFR20 and 10CFR30
- g. Instruction in th AEC license
- h. Instruction in the Operating and Emergency Procedures
- 2. On the Job Training (6 months duration)
 - a. Handling and use of calibration devices
 - b. Handling and use of calibration room warning lights system
 - c. Handling and use of dosimeters and survey instruments

B. PERIODIC TRAINING

- 1. Periodic refresher instructions on fundamentals of radiation protection, given approximately biennially
- 2. Instructions on any changes in the calibration program (at effective date of change), viz.
 - a. Applicable amendments to AEC regulations
 - b. Amendments to the license

NOTE: It will be determined by personal observation and/or written examination that the users thoroughly understand the changes in 2 above, and are competent to use newly added instruments and equipment.

C. PROCEDURE FOR DETERMINING QUALIFICATION OF PERSONNEL

- 1. Supervisory qualified user's observation of trainee's actual handling and use of equipment
 - a. The handling procedures and techniques which are required of the trainee are:
 - (1) Operation of model AN/UDM-1A
 - (2) Radiation surveys and posting
 - (3) Interpretation of readings
 - (4) Operation of the calibration room warning lights system
 - b. Establish the trainee's ability to apply radiation safety competence to using the equipment by:
 - (1) His demonstrated understanding of AEC regulations, the AEC license, and the Operating and Emergency Procedures
 - (2) His demonstrated understanding of the principles of radiation control
 - (3) His demonstrated judgement under simulated emergency situations

D. PROCEDURE FOR CERTIFICATION OF QUALIFIED PERSONNEL

1. Nomination of eligible trainees by the supervisory qualified user to the Radiological Protection Officer for certification examination
2. Completion of the Radiation Safety Certification Examination with a score of 75% or more
3. Attendance at the examination review critique

CERTIFICATION EXAMINATION

RADIAC REPAIR FACILITY PERSONNEL

JANUARY 1970

NOTE: This examination, or one similar in type, scope, and difficulty periodically revised to reflect conditions of the current license, and to avoid repetition, will be used.

ATTACHMENT A
ENCLOSURE 1

CERTIFICATION EXAMINATION
RADIAC REPAIR FACILITY PERSONNEL

1. Read the question carefully.
 2. Review its list of answers.
 3. Select the statement that best answers the question
 4. On the answer sheet, mark an " X " in the appropriate block.
-
1. Areas where a radiological hazard exists because calibration sources are being used or stored, or wipe testing is being performed, shall be marked with
 - a. red danger signs with appropriate legend.
 - b. three-bladed symbol in red and white color combination with appropriate legend.
 - c. three-bladed symbol in magenta (or purple) and yellow color combination with appropriate legend.
 - d. none of the above.
 2. A licensee must immediately notify the AEC Division of Compliance in his area by telephone and telegraph of any incident wherein a byproduct material source causes an individual to receive a whole-body exposure of
 - a. 25 rems or more.
 - b. 5 rems or more.
 - c. 3 rems.
 - d. 1.25 rems.
 3. A sign bearing the conventional radiation caution colors and symbol, and the words "Caution-High Radiation Area" describes an area where radiation levels are such that in any one hour a major portion of the body could receive a dose in excess of
 - a. 2 mrem.
 - b. 5 mrem.
 - c. 100 mrem.
 - d. 50 mrem.
 4. A former employee may receive, under provisions of 10 CFR 20, a report of his exposure by
 - a. filing a claim for it.
 - b. requesting it from the licensee.
 - c. taking no particular action.
 - d. none of the above.
 5. What is the maximum whole-body dose that may be received by an individual who has not completed a form AEC-4.
 - a. 1.25 rems per calendar quarter.
 - b. 5 rems per quarter.
 - c. the calculated permissible lifetime dose.
 - d. all of the above.

6. An employee involved in an exposure to radiation which is reportable to the AEC must also be
 - a. ordered to show cause why he should not be reprimanded.
 - b. notified by the licensee in writing of the nature and extent of exposure.
 - c. given a period of hospitalization under observation.
 - d. carefully instructed in filling out reports in event of future incidents.
7. The licensee is required to report to the AEC in writing, within 30 days, any exposure to radiation in excess of limits in 10 CFR 20 of the license. The report must describe
 - a. the extent of exposure of persons to radiation or to radioactive material.
 - b. levels of radiation and concentrations of radioactive material involved.
 - c. cause of the exposure and corrective measures taken.
 - d. all of the above.
8. Licensed material may be disposed of by
 - a. disposal into a sewage system provided the material is readily soluble and the concentration when diluted is less than 1 millicurie.
 - b. incineration in underground disposal sites.
 - c. dispersion into the Bay or any natural stream emptying into it.
 - d. transfer to an authorized recipient.
9. All individuals working in a restricted area shall
 - a. be informed of the occurrence of radioactive material or radiation in the area.
 - b. be instructed in safety problems, precautions and AEC regulations.
 - c. be advised of radiation exposure reports upon their request.
 - d. all of the above.
10. An exposure of 1.25 rems per calendar quarter will not be permitted to an individual if his age is under
 - a. 18 years.
 - b. 19 years.
 - c. 21 years.
 - d. 25 years.
11. The official record of an individual's dose is derived by
 - a. calculating his potential exposure.
 - b. estimating how much time he spent in a radiation area.
 - c. reading his film badge.
 - d. interpreting a radiac reading.

12. Which of the following are required by AEC regulations ?
- Surveys - shall be made as necessary to comply with 10CFR20.
 - Personnel monitoring equipment - shall be supplied and used.
 - Radiation warning signs, labels, and signals for Radiation Areas.
 - All of the above.
13. Units of accumulated radiation dose are expressed in
- Curie (Ci), millicurie (mCi).
 - Roentgen (r) per hour, or milliroentgen (mr) per hour.
 - Roentgen equivalent man (rem), milliroentgen equivalent man (mrem)
 - RBE
14. The radiation dose is the
- quantity of ionizing radiation absorbed by the body or any portion of the body.
 - the amount of ionizing radiation which cannot be exceeded.
 - the amount of radiation given off by a radioactive source.
 - the amount of dose required to cause blood changes.
15. A film badge is a device designed to be worn by an individual for the purpose of
- measuring the dose received.
 - preventing exposure.
 - permitting admission to radiation areas.
 - None of the above.
16. Which of the following illustrates the best means of protection from internal radiation exposure ?
- Time, distance, shielding.
 - Confinement of the source, respirators, and protective clothing.
 - Adequate ventilation, filtering of air.
 - Lead, concrete and steel.
17. Pocket dosimeters
- detect contamination
 - protect the wearer from harmful effects of radiation
 - are issued to personnel who work in an area where the radiation level may result in exposure greater than the RPG or is variable.
 - provide a monthly cumulative radiation measurement.
18. If the radiation level is 10 mr/hr at 10 feet from the source, the radiation level at 20 feet will be
- 20 mr/hr.
 - 2.5 mr/hr.
 - 5 mr/hr.
 - 100 mr/hr.

19. Unsealed sources transported on the Shipyard shall be
- loaded or packaged so that contamination will not spread on the Shipyard.
 - monitored before leaving the posted area, by the Health Physics Personnel or by a suitably trained monitor approved by the Health Physicist.
 - loaded, and unloaded under the surveillance of the Health Physics Branch.
 - All of the above.
20. Permanent Radiation Areas will be monitored at regular intervals not exceeding
- one month
 - one week
 - each quarter
 - at the end of each shift.
21. A request for authority to get a new sealed source will be
- approved by the Health Physics Branch.
 - forwarded to Code 108 for the Radioactive Materials Control Committee to review.
 - sent directly to the Supply Department.
 - all of the above.
22. If a shield of $1/8$ " lead will cut the radiation to half its original value, $1/4$ " lead shield will
- cut it to $1/16$ of its original value
 - have no further effect.
 - cut it to practically nothing.
 - cut it to $1/4$ of its original value.
23. Information on the AEC approved label affixed to the source container to be shipped out shall be in accordance with the recommendations of
- one of the individuals named on the license
 - Health Physics Branch.
 - Supply Department.
 - Industrial Radiological Protection Officer.
24. A gamma radiation level of 1.6 r/hr is produced at 3 feet from a 1-curie cobalt-60 capsule. A man remains 6 feet from a 10-curie cobalt-60 source for 2 hours. His approximate radiation dose is:
- 0.4 rem.
 - 4 rem.
 - 0.8 rem.
 - 8 rem.

25. Which of the following combinations illustrates the best means of protection from external radiation?
- Controlling working time, distance from the source, and shielding.
 - Lead, concrete and steel.
 - Controlling the intensity and energy of each exposed source.
 - Protective clothing, mask, gloves.
26. The curie is the unit for
- measuring radiation based on the energy absorbed by the material the rays pass through.
 - measuring the quantity of radioactive material (3.7×10^{10} disintegration per second).
 - radiation intensity in terms of air ionization (6.2×10^{12} ion pairs/cm).
 - None of the above
27. An incoming sealed calibration source will not be accepted for use until
- the container has been monitored and released by the Industrial Radiological Protection Officer.
 - the container has been monitored and released by Health Physics personnel.
 - the Supply Officer certifies safe condition of the source.
 - all of the above.
28. An acute exposure is one that
- is received by the whole body only.
 - does extensive damage to the whole body only.
 - is received within a short space of time.
 - is repeated at regular intervals continuously over a long period of time.
29. The LD 50 (median lethal dose where half of those expose die) for ionizing radiation exposure of human beings is an acute, whole body exposure of
- about 800mrem
 - Unknown
 - about 500 rem.
 - 5000 rem.
30. Radioactive material from unsealed sources can enter the body by
- inhalation
 - ingestion (swallowing).
 - through breaks in the skin or even absorption through the skin.
 - all of the above.

31. " Isotopes " may be defined as
- an atom containing the same total number of neutrons and protons.
 - two nuclei of the same element which have different masses.
 - the only elements that are radioactive and cause ionization.
 - a molecule containing three atoms.
32. The difference between X-rays and gamma rays is
- X-rays are not penetrating.
 - gamma rays cannot be used like X-rays.
 - gamma rays originate in the nucleus of the atom and X-rays do not.
 - none of the above.
33. A chronic exposure to ionizing radiation is one that
- is repeated at short, regular intervals continuously over long periods of time.
 - is received by the whole body.
 - does extensive damage that is observable.
 - occurs within a short space of time.
34. The half-life of a radioisotope is
- 10 years
 - the time required for half an atom to decay
 - the number of atoms disintegrating per minute
 - the time required for one-half of the atoms of the radioisotope to decay.
35. A one hour exposure of an individual to gamma radiation intensity of 20 r/hr would cause
- mild radiation sickness to some.
 - deaths to half exposed.
 - no detectable effects.
 - obvious blood count changes.
36. Ion pairs consist of
- charged protons and neutrons.
 - a negative electron and a positive electron.
 - a negative electron and a positive atom.
 - none of the above.
37. The AN/PDR-27 radiac can detect
- any kind of radiation
 - beta and gamma radiation
 - alpha radiation
 - gamma radiation only

38. Gamma radiation emitted from sealed radioactive sources in use on this Shipyard
- Has very high penetrating power similar to X-rays and presents the principle health hazard
 - is the principle source of internal health hazard
 - has limited penetrating power so that few escape the source capsule.
 - has none of the above properties
39. About the only way to make ordinary materials radioactive is to
- expose them to gamma rays.
 - expose them to X-rays.
 - bombard them with fast-moving particles; for example, neutrons, in a nuclear reactor.
 - all of the above.
40. Atoms of the same chemical element which have different numbers of neutrons in the nucleus and therefore different atomic weights are called
- Protons.
 - Neutrons.
 - Electrons.
 - Isotopes.
41. External exposure to ionizing radiation is harmful to humans because
- it makes them radioactive.
 - it is contagious.
 - it ionizes the air around them, making breathing difficult.
 - it damages cell inside the body.
42. Persons convicted of wilful violations of license provisions
- may be punished only by fine.
 - may be punished only by imprisonment.
 - may be punished by fine and/or imprisonment.
 - may not be punished.
43. With regard to byproduct material licenses, the AEC may
- inspect the material, premises and related facilities and records.
 - require appropriate tests of the material, facilities and radiation detection equipment.
 - revoke, suspend or modify the license.
 - withhold or recall the byproduct material for violations of the license.
 - all of the above.
44. Records concerning licensed byproduct materials must be kept to show

- a. effectiveness compared with previous sources.
 - b. changes in weight and shape.
 - c. receipt, transfer and disposal.
 - d. none of the above.
45. Byproduct material may be used for purposes other than those specified in the license only if
- a. strict safety precautions are observed, and the use is approved by the Supervisor.
 - b. Health Physics Branch is notified.
 - c. all of the above measures are taken.
 - d. you want to lose your certification quickly.
46. Byproduct material means
- a. material produced on a radiation sensitive surface by utilizing sealed sources containing radioactive material.
 - b. any material produced in a sealed container.
 - c. any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.
 - d. none of the above.
47. " Sealed source " means any byproduct material that is encased in a capsule designed to
- a. survey the amount of radiation present.
 - b. activate atoms in materials.
 - c. prevent leakage or escape of the byproduct material.
 - d. all of the above.
48. Licenses for use of a sealed source of byproduct material, as defined in 10CFR 30, are issued by the
- a. Navy Department.
 - b. Industrial Radiological Protection Officer.
 - c. Shipyard Commander.
 - d. Atomic Energy Commission.
49. What amount of contamination found from an AEC-licensed source makes it necessary that the Health Physicist be notified so that he can prepare a report to the Industrial Radiological Protection Officer, giving all pertinent data and recommendations?
- a. 5 microcuries
 - b. .005 microcuries
 - c. .05 microcuries
 - d. .5 microcuries

50. Leak testing of licensed sources in the Radiac Repair Facility is done by Health Physics personnel
- Upon request of the Radiological Protection Officer
 - Same date as received
 - Every six months
 - At each inventory
51. Removal, exchange, repair or servicing of sealed sources in the AN/UDM-1A or/and AN/UDM-1 calibration devices by shop personnel in the Radiac Repair Facility may
- be done when necessary to meet an emergency repair schedule.
 - be done when authorized by the Supervisor with Health Physics Branch approval.
 - not be done under any circumstances.
 - be permitted if the individual is certified and authorized by the Supervisor.
52. Sealed calibration sources will be leaked tested by
- Industrial Radiological Protection Officer.
 - the Supervisor.
 - Health Physics Branch personnel.
 - any Radiac Repair Facility personnel.
53. Each sealed source containing byproduct material other than Hydrogen-3, with half life greater than 30 days and in any other form than gas shall be tested at intervals not to exceed
- 1 month
 - 1 week
 - 3 months
 - 6 months
54. Records of regular test results shall be kept in units of
- microcuries
 - millicuries
 - curies
 - Need not be kept.
55. A calibration source arriving at the Radiac Repair Facility must
- bear a release from the trucking carrier.
 - have a leak test certification from the manufacturer or Health Physics Branch before use.
 - bear a release from the Supply Officer.
 - be signed for by the Forman.
56. The license under which ionizing radiation sources are used in the Radiac Repair Facility specifies that these sources are to be used only for

- a. simulated radiation fields for disaster training
 - b. training of Nondestructive Test branch Radiographers
 - c. the calibration of instruments to detect and measure ionizing radiation
 - d. the calibration of instruments and equipment to produce ionizing radiation
57. If you were told by a military or civilian supervisor, other than your immediate supervisor, to omit a safety precaution or to perform a potentially unsafe act, you would
- a. comply and make a report to your supervisor
 - b. refuse to comply
 - c. refer him to your supervisor
 - d. comply and say nothing
58. In the event of fire in or adjacent to the Radiation Area surrounding a calibration source, indicate the proper sequence of actions to be taken by the person in charge of the area or radioactive source. (Place a number 1 inside the parentheses in front of the first action, a number 2 for the second action and so on).
- () a. Vacate the room in accordance with established fire drill procedures.
 - () b. Stand by at a safe distance and inform the Fire Protection Branch Supervisor present of the location and status of the source.
 - () c. Immediately secure the source.
 - () d. Leave the door to the Calibration Room unlocked.
59. Changes or alterations of the Radiac Repair Facility Emergency and Operating Procedures and specified practices
- a. may be made with the consultation of Code 730 because the procedure is a condition of the AEC license.
 - b. may be made after consultation with Code 732.
 - c. may be made with prior consultation of Code 108 and receipt of an appropriate license amendment.
 - d. none of the above applies.
60. Indicate the proper sequence of events necessary to obtain certification as a calibration source operator.
- () a. Supervisors nomination of the individual as a competent operator of sources and related equipment, to the Radiological Protection Officer for certification as to radiation Safety competence
 - () b. Individual has completed training program for users of Radiac Repair Facility radioactive sources
 - () c. Individual has 6 months' experience on-the-job training with a certified calibration operator
 - () d. Individual has completed the radiation safety competence certification examination with a grade of at least 75% and attended a review critique.

61. Which of the following with the advice of the Radiological Protection Officer and Health Physicist, is (are) responsible for implementation of the overall radiation protection program of the Radiac Facility?
- Master Mechanic, Electrical-Electronics Group.
 - Quartermaster Electronics Mechanic.
 - Leadingman Electronics Mechanic.
 - All of the above.
62. Responsibility for the safe use of the calibration sources and strict observance of regulations pertaining thereto is invested in
- the Shipyard Commander.
 - those certified by the Radiological Protection Officer as being qualified operators of calibration sources.
 - the Health Physicist.
 - the Radiological Protection Officer.
63. New personnel assigned to work in the Radiac Repair Facility
- are required to read and understand the license and Emergency and Operating Procedures prior to entering the Radiation Area.
 - must be given instructions concerning the hazards of working with ionizing radiation.
 - must be assigned to work with a certified operator for on-the-job training.
 - All of the above.
64. Each operating employee is responsible for
- being aware of the hazards involved in handling radioactive sources and safeguarding such sources to prevent unnecessary exposure.
 - understanding and following all conditions of the AEC license.
 - properly operating the equipment and related handling tools and instruments.
 - All of the above.
65. In addition to having access to the current license, each certified calibration operator must be familiar with and have a copy of
- 10 CFR Part 20.
 - 10 CFR Part 30.
 - Emergency and Operating Procedures for Radiac Repair Facility.
 - All of the above.
66. Dosimeters shall be
- fully charged at least weekly and doses shall be recorded daily.
 - charged when it is out of range and readings recorded weekly.
 - charged daily and the readings recorded daily.
 - read only by the Health Physics Branch.

67. Radiation survey instrumentation shall have a range of at least:
 - a. 5 mr/hr to 5 r/hr.
 - b. 1 r/hr to 10 r/hr.
 - c. 0 mr/hr to 500 mr/hr.
 - d. 2 mr/hr through 1 r/hr.

68. Each radiation survey instrument used to make physical radiation surveys in the Radiac Repair Facility will be calibrated after each servicing and at intervals not to exceed
 - a. one month.
 - b. three months.
 - c. six months.
 - d. that determined by Health Physics.

69. To be sure that a source is returned to its normal storage position during calibration operations, you should
 - a. crank the source all the way in.
 - b. a physical radiation survey shall be made before and after each calibration exposure.
 - c. connect the warning lights and audible alarm.
 - d. ask your Supervisor.

70. The Radiac Repair Facility Emergency and Operating Procedures
 - a. must be followed by all persons in order to avoid health hazards resulting from improper handling, use, storage, transportation, security or disposal of the sources.
 - b. apply to all operations and associated work performed by Radiac Facility personnel.
 - c. deal with the safe operation of sealed sources of ionizing radiation and the equipment containing them.
 - d. apply to all of the above.

71. Each exposure device or storage container shall be kept locked except when operated by or under the direct surveillance of
 - a. the Radiological Protection Officer.
 - b. any Radiac Repair Facility Personnel.
 - c. a certified calibration operator.
 - d. the facility Supervisor.

72. At areas marked with warning lights, rope barricades and approved AEC warning signs,
 - a. visitors or unqualified persons shall be permitted to enter if they will only remain for very short times.
 - b. any Shipyard employee may enter if accompanied by a radiac mechanic who will make sure a hazard does not exist.
 - c. visitors are permitted to enter if they have a shop pass.
 - d. a certified operator shall maintain direct surveillance to prevent unauthorized entry.

73. The best way to avoid overexposure to radiation when approaching the AN/UDM-1A Calibration set is to
- wear a film badge
 - watch the lights and signals of the control unit
 - wind the crank handle of the control unit as far as it will go.
 - monitor with an AN/PDR-27 or Eberline 4001 radiac.
74. In manipulating the AN/UDM-1A set
- only one operator is required and he must take a position behind the barrier
 - two operators are required, both must take their positions behind the barrier
 - two operators are required, but only one must take a position behind the barrier
 - the only operator of the set may or may not take a position behind the barrier
75. The person directly responsible to the licensee for compliance with 10CFR, Parts 20 and 30, and the conditions of the license is
- the Health Physicist
 - the Radiological Protection Officer
 - the Shipyard Commander
 - the Calibration Operator
76. Whenever warning lights go out or an alarm sounds during an operation,
- return the source to the stowed position immediately.
 - leave the source exactly as it is and ask another operator to verify the abnormal behavior.
 - do not touch the source until you can locate another meter
 - immediately evacuate the calibration room and notify your Supervisor.
77. When a source has decayed to the point where it must be renewed, the exposure device will be returned for replacement of source to
- Health Physics Branch.
 - BuShips.
 - the manufacturer, vendor, or other AEC-licensed receipt designated by BuShips.
 - Industrial Radiological Protection Officer.
78. Ionization means
- conversion of gamma rays into a pair of subatomic particles - an electron and a positron.
 - disintegration of radioactive nuclei.
 - knocking an electron out of its orbit around the nucleus of an atom, leaving the atom with a positive charge
 - emission of fast particles of rays by nuclei.

79. The Radiac Repair Facility is required to maintain up-to-date records of
- location of all assigned calibration sources and licenses authorizing possession and use.
 - list of certified and medically qualified personnel.
 - results of area surveys and monitoring.
 - receipts, transfers, and disposal documents concerning licensed sources.
 - all of the above.
80. When control of a sealed radioactive source is lost, indicate the proper sequence the actions to be taken by personnel.
- Immediately notify one of the responsible Supervisors listed on the emergency call list posted at the telephone.
 - Post and barricade the affected area.
 - Quickly survey the area to determine the extent of the emergency.
 - Secure the source immediately and evacuate the immediate area.
 - Stay in the general area until monitored by Health Physics when spillage of radioactive material may have occurred in order to avoid the spread of contamination.
 - Operators set a watch to prevent entry of personnel until relieved by proper authority.
81. When using an AN/PDR-27, set on the 0-5mr/hr. scale to check the radiation level at marked spot behind the source container, if the reading shows more than 1 mr/hr then
- the source is in the safe storage position.
 - there is a defect in the positioning mechanism.
 - the source is not leaking and the operation appears normal.
 - the source is fully exposed.
82. Which of the following occurrences need not be immediately reported to the Supervisor by an operating employee ?
- Damage to the radiation shield, source container, or protective equipment.
 - " Drift " of a pocket dosimeter.
 - Exceeding radiation exposure limit or dosimeter reading.
 - Possible introduction of radioactive material through a break in the skin.
 - Spill or leak of a radioactive material.
83. Certification as a calibration operator is issued by
- the Shipyard Commander.
 - the Medical Officer.
 - the Health Physicist.
 - the Radiological Protection Officer.
84. A label or sign, durable and clearly visible, bearing the radiation symbol and the words " caution (or Danger) Radioactive Material, "

84. Continued.

is required for

- a. rooms in which sources are used.
- b. all containers or radioactive sources.
- c. rooms in which sources are stored.
- d. all of the above.

85.. An emergency exists whenever

- a. a source is dropped.
- b. a source is leaking.
- c. a source fails to return to its normal storage position.
- d. any of the above.

SUPPLEMENT 1

AN/UDM-1A Calibration Room. The calibrator is completely contained in a detached room (or house) of permanent construction, built on a corner of the roof of the fifth floor, of Building 253. Only two walls of the room are accessible to persons on the outside of the room. The only access into the room are doors in each of these two walls. The direction of the radiation beam is away from these two walls, out through a window and into unoccupied space 85 feet above the ground, so that no person on the outside of the room can foreseeably get into the radiation beam. The Calibration Room is above the tops of adjoining or nearby structures. Radiation surveys have been made on the tops of these structures, on the ground nearby, on ships moored at nearby berths, and on the fifth floor of Building 253 below the Calibration Room. These adjoining places have been found free of radiation from the AN/UDM-1A source while calibration operations have been taking place. See attached Sketch #1.

The doors to the AN/UDM-1A calibration room are kept locked at all times when not in use. They are unlocked only when authorized persons are actually entering or leaving the room. The keys for the room are kept in a locked cabinet in Building 351A at all times during which no work is being done in the Calibration Room. The room is posted on the outside at all times with radiation caution signs. Red warning lights are located on the exterior of the enclosure near each access. These caution lights are connected with the calibrator controls so as to be automatically lighted when the source is in the unattenuated position. This and other safety devices for securing the calibrator controls are shown in attached Sketch #2.

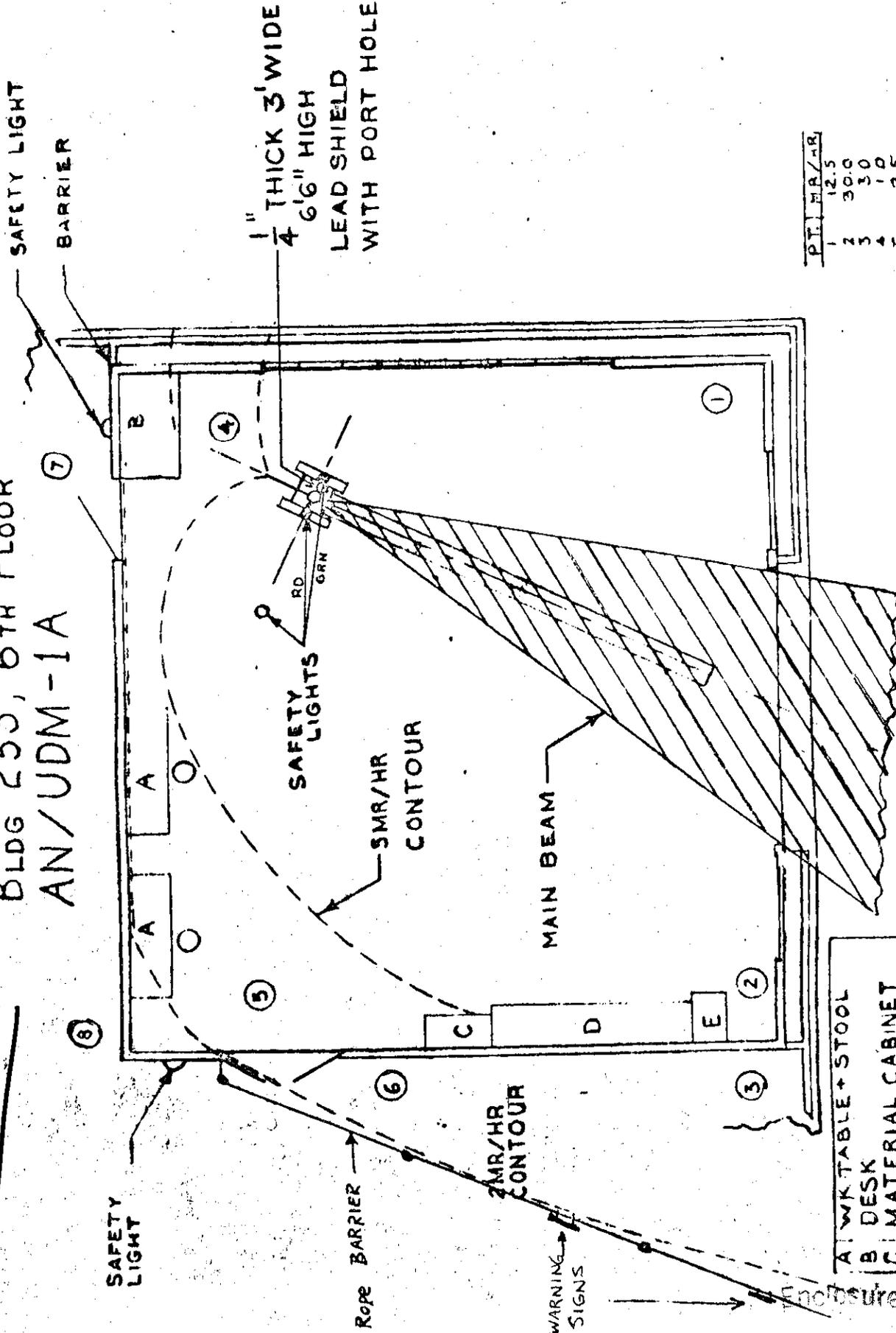
ATTACHMENT B
SUPPLEMENT 1

Enclosure (1)

CALIBRATION ROOM

BLDG 253, 6TH FLOOR
AN/UDM-1A

Sketch #1

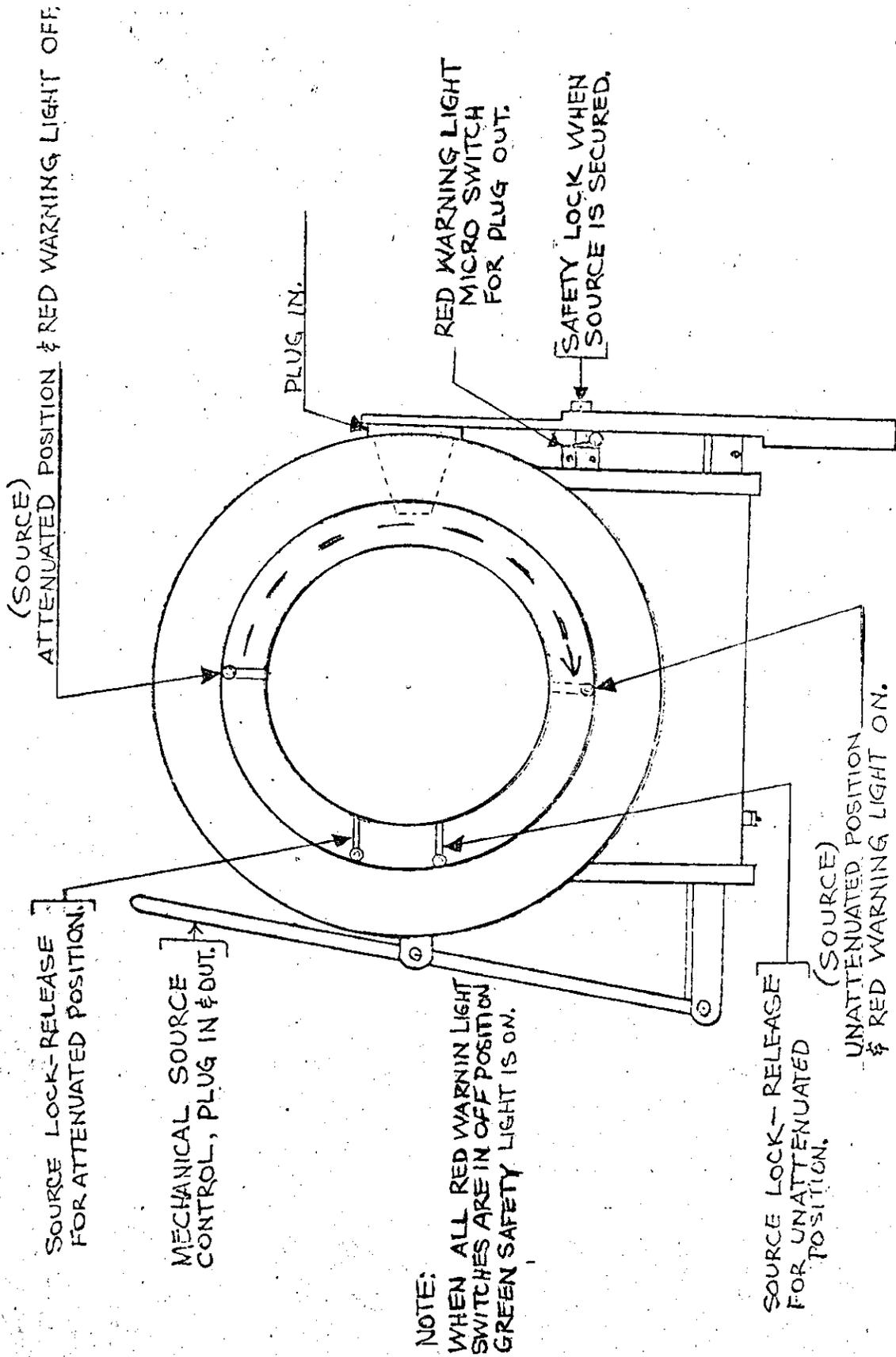


PT.	MR/HR
1	12.5
3	30.0
4	5.0
5	1.0
6	2.5
7	1.25
8	1.5
9	0.5

SCALE: 1/8" = 9"

- A WKT TABLE + STOOL
- B DESK
- C MATERIAL CABINET
- D EQUIPT. STORAGE
- E SAFE

Sketch #2



NOTE:
WHEN ALL RED WARNING LIGHT SWITCHES ARE IN OFF POSITION GREEN SAFETY LIGHT IS ON.

AN/UDM-1A CALIBRATOR CONTROLS WITH SAFETY AND INDICATING DEVICES

EMERGENCY AND OPERATING PROCEDURES

RADIAC REPAIR FACILITY

ELECTRONICS SHOP

PRODUCTION DEPARTMENT

HUNTERS POINT NAVAL SHIPYARD

SAN FRANCISCO, CALIFORNIA 94135

JANUARY 1970

ATTACHMENT C

ENCLOSURE (1)

RADIAC REPAIR FACILITY
EMERGENCY AND OPERATING PROCEDURES

A. Introduction

The Radiac Repair Facility of the Electronics Shop at Hunters Point has custody of and uses a radioactive byproduct material source of ionizing radiation under a license issued by the Atomic Energy Commission. This source is used for the calibration of instruments to detect and measure ionizing radiation.

B. Caution

All personnel are cautioned that excessive exposure to ionizing radiation from this radioactive source is extremely hazardous to the health of individuals so exposed. Excessive exposure may result from improper handling, use, storage, transportation, security, or disposal of the source.

C. Instruction

Accordingly, all radiac repair facility personnel are directed to follow the instructions contained in this procedure, which deals with the safe operation of this sealed source and the equipment containing it.

D. Scope

This procedure applies to all operations and associated work performed by Radiac Repair Facility personnel.

E. Procedural Changes.

Because this procedure is a condition of the AEC license, no change or alteration of it or the practices specified in it will be made without prior consultation of the Radiological Protection Officer, Code 198, and application for and receipt of an appropriate license amendment or renewal, as specified in current Shipyard instructions.

F. Responsibilities

1. The use of the radioactive calibration source in the Radiac Repair Facility will be under the supervision of individuals who have been certified by the Radiological Protection Officer.

2. The following persons, or their successors, with the advice of the Shipyard Radiological Protection Officer/Industrial Hygienist are responsible for implementation of the overall radiation protection program of the facility:

R. A. Raggio	Group Superintendent, Electrical and Electronic Shops
C. L. Comstock	Superintendent II, Electronics Shop
C. A. Haffey	General Forman I, Electronics Mechanic
G. J. Menize	Forman Instrument Mechanic, in charge of Radiac Repair Facility.

3. Each operating employee is responsible for:

a. Being aware of the hazards involved in handling byproduct radioactive material sources and safeguarding such sources in his charge, or with which he is working, to prevent unnecessary exposure to himself and other personnel.

b. Understanding and following these procedures and all conditions of the AEC license.

c. Properly operating the equipment, related handling tools and survey instruments, which will be used in his work assignments and using the sources only for purposes authorized in the AEC license and this procedure.

d. Following the posted or verbal instructions of his Supervisor.

e. Prohibiting smoking, eating, drinking and chewing in the Calibration Room and the Wipe Test Room.

f. Immediately reporting to his Supervisor any accident or unusual incident involving a source of ionizing radiation, such as, but not limited to the following:

- (1) Exceeding radiation exposure limit or dosimeter reading.
- (2) Protective equipment damaged.
- (3) Any spilling or leak of radioactive material.
- (4) Any damage to a radiation shield or source container.
- (5) Any wound or scratch resulting in a break of the skin or any incident where radioactive material may have entered a person's body.

G. Qualification and Training of Operators

1. Each person to be considered for training or certification as a calibration operator must submit to a medical examination and be qualified for work with ionizing radiation by the Medical Officer. Persons who regularly work with ionizing radiation must also have periodic follow-up examinations.

a. In the event of an acute illness lasting a week or more, the employee must obtain medical clearance prior to returning to duty which requires association with or operation of radiation sources.

2. Each calibration operator will be certified qualified in radiation safety competence at the discretion of the Radiological Protection Officer, after demonstrating to the Supervisor his competence in handling calibration sources and related equipment.

3. New personnel (including apprentices who must be over 18 years of age) who are assigned to work in the Radiac Repair Facility are required to read and understand, prior to entering the Radiation Area, the AEC license and these procedures. They must be given verbal instructions concerning the hazards of working with ionizing radiation and must also be assigned to work with a certified operator for on-the-job training.

4. Calibration operators will be considered for certification after completion of the following:

a. Six months of experience in on-the-job training.

b. Training Program for Users of Radiac Repair Facility Calibration Sources.

c. Nomination of the individual as a competent operator of sources and related equipment, by the Supervisor, to the Radiological Protection Officer for certification as to radiation safety competence.

d. Completion of the certification examination with a passing grade of 75% or more and attendance at the review critique.

5. Certified operators will be given periodic, formal refresher training at appropriate intervals, approximately biennially, as well as short informal refresher sessions conducted by the Supervisor when required.

6. Certification and re-certification will be for periods designated by the Radiological Protection Officer.

7. Each certified calibration operator must be furnished or otherwise have access to (viz. by posting) a copy of 10 CFR 20, 10 CFR 30, this procedure, and the current license.

H. Personnel Monitoring

1. All personnel who enter or are in the Calibration Room during an exposure must wear a film badge issued by the Medical Department and two self-reading pocket dosimeters. The dosimeters must have a range of zero to 200 mr. The Supervisor shall insure that the dosimeters are fully charged at least once a week.

a. Film badges and pocket dosimeters will be picked up at Bldg. 351A at the beginning of the work period and returned to this location at the end of each work period.

2. Doses shall be recorded daily on an exposure/dosimeter record card or permanent log book by the employee. The records shall be maintained for inspection and reviewed by the Supervisor weekly.

3. Any person whose cumulative dosimeter dose reaches 300 mr. in any one week shall be removed from further exposure and his film badge delivered to the Medical Department for evaluation. He shall not be again exposed until approved by the Medical Department. The quarterly exposure limits established by 10 CFR 20 will be adhered to.

I. Radiation Survey Instrumentation

1. Calibrated and operable survey instrumentation is maintained in the Calibration Room to make physical radiation surveys as required by 10 CFR 20 and 10 CFR 30. Each radiation survey instrument shall be calibrated at intervals not to exceed 6 months and after each replacement of batteries, other components or otherwise serviced. A record will be maintained of the latest date of calibration. Survey instrumentation shall have a range such that 2 mr. per hour through 1 r per hour can be measured. The following instruments are currently in use:

AN/PDR-27(), with AN/PDR-43() - calibrated by Radiac Repair Facility.

2. Operators shall inform their Supervisor at any time when the calibration of the instrument seems in doubt. It shall be used to check radiation levels in setting up limits within which non-operating personnel may work.

3. A physical radiation survey shall be made before and after each calibration exposure to determine that the sealed source has been returned to its normal storage position in the shielded container.

4. The Supervisor shall be responsible for the determination of compliance with 10 CFR 20 regarding physical radiation surveys.

J. Security of Sources during Storage and Exposure.

1. The Calibration Room will be kept locked at all times when not in use or otherwise attended by a certified operator.

a. The key to the Calibration Room will be kept in a locked cabinet in Bldg. 351A when work is not being done. The keys will be picked up and returned to this cabinet at the beginning and end, respectively, of each work period.

2. The exposure device and storage container shall be provided with a lock designed to prevent unauthorized or accidental removal or exposure of the sealed source, and shall be kept locked at all times except when under the direct surveillance of a certified operator. Sources will be operated only by or under the direct supervision of one of the certified operators.

3. Each exposure device, storage container, and room in which the source is stored or used shall bear a durable, clearly visible sign or label bearing the radiation symbol and the words "Caution (or Danger) Radioactive Material" in accordance with Section 20.203 of 10 CFR 20. Labels on containers shall also state the quantity and kind of radioactive material and the date of measurement of the quantity.

4. Exposure devices measuring less than four (4) inches from the source storage position to any exterior surface of the device shall have no radiation level in excess of fifty (50) mr/hr at six (6) inches from any exterior surface of the device. Exposure devices measuring four (4) inches or more from the source storage position to any exterior surface of the device, and the storage container, shall have no radiation level in excess of two hundred (200) mr/hr at any exterior surface, and ten (10) mr/hr at one (1) meter from any exterior surface. The radiation levels specified are with the sealed source off (i. e., shielded) position.

5. Whenever practicable, additional shielding should be employed to reduce radiation exposure of the operators or of persons in the unrestricted area.

K. Control of Access to Radiation Areas

1. Security

a. During actual exposures in the Calibration Room a certified operator shall maintain direct surveillance to protect against unauthorized entry into the Radiation Area.

b. A warning sign and warning lights shall be in place at each access into the Calibration Room. The warning lights shall be energized through an interlock with the source controls, to indicate exposure of a source.

2. Posting

a. Notwithstanding any provisions in Section 20.204(c) of 10 CFR 20,

areas in which calibration is being performed shall be conspicuously posted as required by Section 20.203 (b) and (c) (1) 10 CFR 20.

b. Radiation Area - "Radiation Area" means any area accessible to personnel in which there exists radiation, originating in whole or in part within licensed material sources, at such levels that a major portion of the body could receive in any one hour a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 100 millirem. Each Radiation Area, so determined, shall be conspicuously posted with approved AEC sign or signs bearing the radiation caution symbol and the words "CAUTION (DANGER) RADIATION AREA".

c. High Radiation Area - "High Radiation Area" means any area, accessible to personnel, in which there exists radiation originating in whole or in part within licensed source material at such levels that a major portion of the body could receive in any one hour a dose in excess of 100 millirem. Each High Radiation Area, so determined shall be conspicuously posted with approved AEC sign or signs bearing the radiation caution symbol and the words "CAUTION (DANGER) HIGH RADIATION AREA".

d. Restricted Area - "Restricted Area" means any area, access to which is controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.

e. The Calibration Room is a Restricted Area. When the source is exposed, the calibration range is a High Radiation Area.

L. Range Operational Procedures

1. Check source radiation level at marked spot behind source container using a radiac survey instrument. The reading should be no more than 1 mr/hr.

2. Assure that no one is on the range beyond the barrier.

3. Unlock the control handle.

4. Operate source position controls (from a position behind source container) to assure smooth operation and return source to stowed position and verify proper operation of all warning lights and interlocks.

5. Using the low range radiac survey instrument, check radiation level at marked spot behind the source container. The reading should be approximately 0.5 mr/hr. If the reading exceeds 1 mr/hr, there is a defect in the positioning mechanism. Do not proceed until the defect has been corrected. (REPAIRING OR SERVICING OF THE SEALED SOURCE BY SHOP PERSONNEL IS NOT PERMITTED.)

6. With the source in the stowed position, and container plugs in place, place the instrument to be calibrated at the proper position on the range and adjust optical system.

7. Two operators work in unison from operating positions behind the source shield; one exposes the source by means of the source positioning controls, and observes the instrument meter readings while the other operator records data on the calibration sheet.

8. After each reading, the source is returned to its stowed position and the radiation level checked with a survey meter to verify this position before anyone enters the range.

9. If the warning lights go out during the operation, the source shall be returned immediately to its stowed position and the operation secured until the trouble has been found and corrected.

10. Log the total time of calibration in the log book.

11. At the end of each calibration period, the lead operator will verify that the source is in the safe position, lock the control handle, and sign the log book accordingly.

M. Emergency Procedures

1. An "emergency" exists whenever control of a sealed radioactive source has been lost. This includes a dropped source, a leaking source or a source that cannot be returned to its normal storage position.

2. In the event of an emergency, all operating personnel shall:

a. Secure the source immediately.

b. Use a low range survey radiac instrument on the range and evacuate the area to the 2 mr/hr isodose line or to a safe distance beyond, if necessary, and set a watch to prevent entry of personnel.

c. Quickly make a preliminary survey of the area to determine the location and extent of the emergency.

d. If spillage of radioactive material may have occurred, every effort will be made to avoid the spread of contamination. No one will be permitted to leave the safe area until he has been monitored by Industrial Hygiene personnel provided someone else outside the affected area is present to perform the duties below in "e".

e. If either no one else is present, in the event of radioactive contamination, or such contamination is known not to exist:

(1) Notify the Supervisor or one of those named on the emergency list posted at the telephone. All others on the list will be notified thereafter as soon as possible.

(2) Secure any ventilation to the room.

(3) Barricade and post accesses to the area at the 2 mr/hr isodose line or proximal safe distance beyond with the ropes, signs and stanchions provided.

(4) Maintain security of the area until relieved by a Supervisor on the advice of the Radiological Protection Officer, or his representative, who will also advise on remedial action.

(5) Restore ventilation to the room when it is determined that no loose radioactive contamination has resulted.

3. In the event of fire in or adjacent to the Radiation Area, persons in charge of the area or the radioactive material sources shall immediately:

- a. Secure the source.
- b. Vacate the area in accordance with established fire bill procedures.
- c. Close the doors to the Calibration Room and leave them unlocked.
- d. Seek and inform the Fire Protection Branch Supervisor present about the location and status of the sources and hazards involved.
- e. Notify the Supervisor or one of those named on the emergency list posted at the telephone. All others on the list will be notified thereafter as soon as possible.

N. Removal and Exchange of Sealed Sources in Exposure Devices.

1. When a source has decayed to the point where it must be renewed, the exposure device will be returned to the manufacturer, Vendor or other NAVELEX designated recipient for replacement of the source.

2. Operators shall not remove or exchange the sealed source in the AN/UDM-1A calibration device from its present container.

O. Leak Testing of Sources

1. The licensed source in the Radiac Repair Facility is leak tested by Industrial Hygiene personnel at least every six months in accordance with the approved procedure. Records of these tests are kept in the files of the Industrial Hygiene Branch, Radiological Protection Officer and Radiac Section.

P. Records and Reports

1. The following records shall be maintained in the Radiac Repair Facility:
 - a. Quarterly physical inventory and location of all licensed sources.
 - b. Source utilization record.
 - c. Receipts, transfers and disposal documents concerning licensed sources.
 - d. Results of area surveys and monitoring
 - e. Calibration history of survey instruments
 - f. List of currently certified operators
 - g. Type and date of training performed under section G.

- h. Current license application(s) and license(s) issued.
 - i. Film badge exposure results.
 - j. Pocket dosimeter readings.
 - k. Pertinent AEC, ~~BUSHIPS~~ **NAVSHIPS**, NAVELEX, and Shipyard directives and procedures.
 - l. Unusual incidents involving radioactive materials or handling devices.
2. All records pertaining to personnel protection shall be made available to the Radiological Protection Officer, and/or Medical Department personnel upon request.

HUNTERS POINT NAVAL SHIPYARD
MEDICAL DEPARTMENT
INDUSTRIAL HYGIENE DIVISION

Leak Test Procedure for Radiac Calibration Source

1. General

The Radiac Facility, Shop 67, calibration source must be leak tested at least once every six months. The Radiation monitor in the Industrial Hygiene Division shall normally schedule and conduct the test. When required, other persons in the Industrial Hygiene Division, approved by the Radiological Protection Officer, shall schedule and conduct leak tests.

2. Procedure

(a) Assure that the source is in the safe position by observing the controls and indicating lights, and by monitoring with a survey meter.

(b) Wind pressure-sensitive adhesive tape around a half-inch rod with the adhesive side out so that four inches at one end is covered.

(c) Remove the plug from the port, and wipe inside the port by pressing the adhesive tape on all available surfaces. Replace the plug.

(d) Remove the tape from the rod by rolling it up with the adhesive side in, and place it in a half-inch test tube.

(e) Count the wipe in the gamma well-crystal scintillator. Calculate the results as microcuries, and record.

(f) If the results are over 0.005 microcuries, or significantly greater than the previous test, report it to the Radiological Protection Officer.

3. Records and Reports.

(a) Records. The results of each leak test, including date, operator, and activity found, shall be entered on an appropriate Isotope Form Sheet, and filed in the Industrial Hygiene and Radiac Section Files.

(b) Reports. If contamination over 0.005 microcuries of other evidence of leaking is found, the Radiation Monitor will prepare a report to the Radiological Protection Officer via the Head, Industrial Hygiene Division, giving all pertinent data.

ATTACHMENT C

SUPPLEMENT 2

Enclosure 1